



## Respiratory health, effects of ambient air pollution and its modification by air humidity in Drobeta-Turnu Severin, Romania

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**Year:** 2009  
**Journal:** The Science of The Total Environment. 407 (13): 4004-4011

### Abstract:

**BACKGROUND:** Associations between ambient air pollution and respiratory health have been mainly reported for Western Europe and Northern America. **OBJECTIVES:** Our goal was to investigate such associations among the population of Drobeta-Turnu Severin, Romania, a city in Central Eastern Europe (CEE), and to quantify their modification by air humidity. The latter is of increased interest for the current discussion about the potential effects of climate change on human health. **METHODS:** We investigated (study period: 23.01.2001-31.08.2002) the associations between chronic obstructive pulmonary disease (COPD), asthma and chronic bronchitis (CB) and total suspended particles (TSP), sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>). Generalized additive models (GAM) controlling for time patterns and weather effects were applied. Delayed effects up to seven days were analysed in single lag and polynomial distributed lag models (PDLs). **RESULTS:** An increase of 10 microg/m<sup>3</sup> TSP was related to a 3.3% (95% CI: 0.3%-6.4%) and a 2.8% (95% CI: 0.1%-5.7%) increase for hospital admissions for chronic bronchitis with a lag of one and four days, respectively. The adverse effect of TSP on chronic bronchitis was reduced by higher humidity. An increase of 10 microg/m<sup>3</sup> SO<sub>2</sub> was related to a 6% (95% CI: 7%-25%) increase, with a two days lag, for hospital admissions for chronic bronchitis. We have not been able to identify a threshold, below which ambient TSP and SO<sub>2</sub> concentrations have no effect on hospital admissions for chronic bronchitis. We found adverse but nonsignificant influences of TSP, SO<sub>2</sub> and NO<sub>2</sub> on total respiratory hospital admissions, COPD and asthma and NO<sub>2</sub> on chronic bronchitis. **CONCLUSIONS:** We conclude that in Drobeta-Turnu Severin CB is associated with TSP and mainly SO<sub>2</sub>. Dry air aggravates the adverse effect of TSP.

**Source:** <http://dx.doi.org/10.1016/j.scitotenv.2009.02.042>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors

**Air Pollution:** Interaction with Temperature, Particulate Matter, Other Air Pollution

**Air Pollution (other):** SO<sub>2</sub>, NO<sub>2</sub>

#### Geographic Feature:

# Climate Change and Human Health Literature Portal



resource focuses on specific type of geography

Freshwater, Urban

## Geographic Location:

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country :** Romania

## Health Impact:

specification of health effect or disease related to climate change exposure

Respiratory Effect

**Respiratory Effect:** Asthma, Chronic Obstructive Pulmonary Disease, Other Respiratory Effect

**Respiratory Condition (other) :** chronic bronchitis

## Resource Type:

format or standard characteristic of resource

Research Article

## Timescale:

time period studied

Time Scale Unspecified